

Owner's Manual

MOON Series

380 D

32-bit Digital-to-Analog Converter



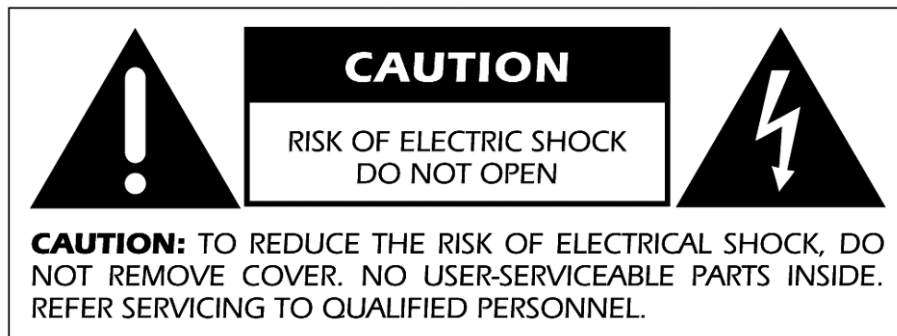
M O O N

MOON 380D Digital-to-Analog Converter

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or another apparatus that produces heat.
9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for safety. If the provided plug does not fit into the outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. Unplug mains cord during transportation.
11. Only use attachments and accessories specified by the manufacturer.
12.  Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power cord or plug has been damaged; liquid has been spilled or objects have fallen into the apparatus; or the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. No naked flame sources, such as candles, should be placed on the apparatus.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.



MOON 380D Digital-to-Analog Converter

Important Safety Instructions (cont'd)



The lightning flash with the arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Marking by the "CE" symbol (shown left) indicates compliance of this device with the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards of the European Community

Please read all instructions and precautions carefully and completely before operating your Simaudio MOON 380D Digital-to-Analog Converter.

1. **ALWAYS** disconnect your entire system from the AC mains before connecting or disconnecting any cables, or when cleaning any component.
2. The MOON 380D must be terminated with a three-conductor AC mains power cord which includes a protective earthing connection. To prevent shock hazard, all three connections must **ALWAYS** be used. Connect the MOON 380D only to an AC source of the proper voltage; Both the shipping box and rear panel serial number label will indicate the correct voltage. Use of any other voltage will likely damage the unit and void the warranty
3. AC extension cords are **NOT** recommended for use with this product.
4. **NEVER** use flammable or combustible chemicals for cleaning audio components.
5. **NEVER** operate the MOON 380D with any covers removed. There are no user-serviceable parts inside. An open unit, especially if it is still connected to an AC source, presents a potentially lethal shock hazard. Refer all questions to authorized service personnel only.
6. **NEVER** wet the inside of the MOON 380D with any liquid. If a liquid substance does enter your MOON 380D, immediately disconnect it from the AC mains and take it to your MOON dealer for a complete check-up.
7. **NEVER** expose the MOON 380D to dripping or splashing of liquids and no objects filled with liquids, such as vases, shall be placed on top.
8. **NEVER** block air flow through ventilation slots or heatsinks.
9. **NEVER** bypass any fuse.
10. **NEVER** replace any fuse with a value or type other than those specified
11. **NEVER** attempt to repair the MOON 380D. If a problem occurs contact your MOON dealer.
12. **NEVER** expose the MOON 380D to extremely high or low temperatures.
13. **NEVER** operate the MOON 380D in an explosive atmosphere.
14. **ALWAYS** keep electrical equipment out of reach of children.
15. **ALWAYS** unplug sensitive electronic equipment during lightning storms.

FCC information for **MOON 380D** Digital-to-Analog Converters equipped with the **MiND** Music Streamer module:

This unit contains Transmitter Module FCC ID : ZUCSEDMP3.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Table of Contents

Congratulations	5
Unpacking and Warnings	5
Introduction	6
Installation & Placement	6
Front Panel Controls	7
Rear Panel Connections	9
SimLink™	10
Operating the 380D	10
Remote Control Operation	11
Balanced Operation	11
Specifications	12

www.simaudio.com

Simaudio Ltd., 1345 Newton Road
Boucherville, Quebec J4B 5H2 CANADA

MOON 380D Digital-to-Analog Converter

Congratulations!

Thank you for selecting the **MOON 380D** Digital-to-Analog Converter as a part of your hi-fi reproduction system. This product has been designed to offer state-of-the-art high-end performance in an elegant package, while retaining all the sonic hallmarks on which Simaudio has made its reputation. We have spared no effort to ensure that it is amongst the finest digital audio products available. We have been building high-performance audio equipment for over 30 years, and the know-how gained through our cumulative experience is an important reason why **MOON** digital products are so musically satisfying.

The performance of your **380D** will continue to improve during the first 400 hours of listening. This is the result of a “break-in” period required for the numerous high quality electronic parts used throughout this Digital-to-Analog Converter.

Before setting up your new **MOON 380D**, we encourage you to please read this manual thoroughly to properly acquaint yourself with its features. We hope you enjoy listening to the **MOON 380D** Digital-to-Analog Converter as much as the pride we have taken in creating this fine audio product. We understand the power and emotion of music and build our products with the goal of faithfully capturing these elusive qualities.

The information contained in this manual is subject to change without notice. The most current version of this manual is available on our official website at <http://www.simaudio.com/manuals.htm>

Unpacking

The **MOON 380D** Digital-to-Analog Converter should be removed from its box with care. The following accessories should be included inside the box with your Digital-to-Analog Converter:

- ✓ AC power cable
- ✓ 'CRM-2' remote control with two 'AA' batteries
- ✓ 'SimLink' cable with 1/8" mini plug terminations on each end
- ✓ Wi-Fi antenna for “**MiND** Music Streamer” equipped version of the **MOON 380D**
- ✓ This owner's manual
- ✓ Warranty and product registration information (USA and Canada only)

As soon as the Digital-to-Analog Converter is safely removed from its box and placed down, perform a thorough physical inspection and report any physical damage to your dealer immediately. We suggest that you keep all of the original packaging, storing it in a safe, dry place in the event that you're required to transport this product. The customized packaging is specially designed to protect the **MOON 380D** Digital-to-Analog Converter from potential damage that may occur during shipping.

Please write the serial number of your new Simaudio **MOON 380D** in the space provided below for future reference.

Serial No.: _____

For MOON 380D's equipped with the optional MiND Music Streamer, please visit:

<http://www.simaudio.com/MiND.htm>

to download PDF versions of both the “MiND Setup Guide” and “MiND App User Guide”.

MOON 380D Digital-to-Analog Converter

Introduction

Your **MOON 380D** Digital-to-Analog Converter incorporates many innovative significant design features to achieve its “world class” level of performance. This is an abbreviated list of the more important features:

ESS Technology **SABRE³² Ultra DAC/Digital Filter** (ES9016) working in **32-bit Hyperstream™** to achieve unprecedented jitter immunity and low-level linearity via a patented **Time Domain Jitter Eliminator**.

Digital Audio Signal Processing using **M-AJiC32** (MOON Asynchronous Jitter Control in 32-bit mode)

Eight (8) digital inputs (AES/EBU x 2, S/PDIF x 3, TosLink x 2 and USB x 1) allowing for a connection to virtually any digital source, along with **one (1) digital output** – S/PDIF

Optional **MiND** (MOON intelligent Network Device) module (9th input) via WiFi or Ethernet input for multi-room streaming

Optional variable analog outputs (balanced & single-ended) using **M-eVOL** volume circuit which was originally developed for the MOON Evolution series. Accessible using the remote control, this volume operates in 1dB increments. **M-eVOL** is based on a resistive array configuration with no sonic degradation of the audio signal at all volume settings.

Full **digital monitor loop** on S/PDIF to accommodate external devices such as a room correction component

Separate digital and analog power supplies, each using a toroidal transformer and 11 stages of voltage regulation

“Dual Jitter Control System” producing a digital signal that is virtually jitter-free, measuring below “1 picosecond” as well as ensuring compatibility with virtually any digital device

USB input with galvanic isolation which eliminates all ground current (i.e. no electrical connection) between the USB device (computer, music server, etc) and the 380D, preserving the accuracy of the audio signal.

RS-232 port for (i) full unsolicited bidirectional feedback and (ii) firmware updates; **12 Volt trigger** output for remote operation and **IR input** for external control with aftermarket infrared remote control receivers

Four-layer pure copper circuit PCB tracings; The advantages include better ground and power supply circuit layouts resulting in a much shorter signal path and dramatically improved signal-to-noise ratio.

Rigid chassis construction to minimize the effects of external vibrations.

Accurate matching of the very finest quality electronic components in a **symmetrical** circuit design.

Designed to be **powered up at all times** for optimal performance.

Installation & Placement

The **MOON 380D** requires only minimal ventilation to maintain an optimum and consistent operating temperature. However, you should avoid placing it near a heat source as this could compromise the Digital-to-Analog Converter's performance and reliability. As well, it should be placed on a solid level surface. The **380D** uses toroidal transformers; even though they are well shielded, you should not place the Digital-to-Analog Converter too close to source components sensitive to EMI, such as a turntables.

In the event that your **MOON 380D** is equipped with the “**MiND** Music Streamer” option and you intend to use its wireless streaming feature (between your wireless router and your **380D**), you must install the included Wi-Fi antenna on the back panel by screwing it into the socket labelled “WIFI ANT”.

MOON 380D Digital-to-Analog Converter

Front Panel Controls

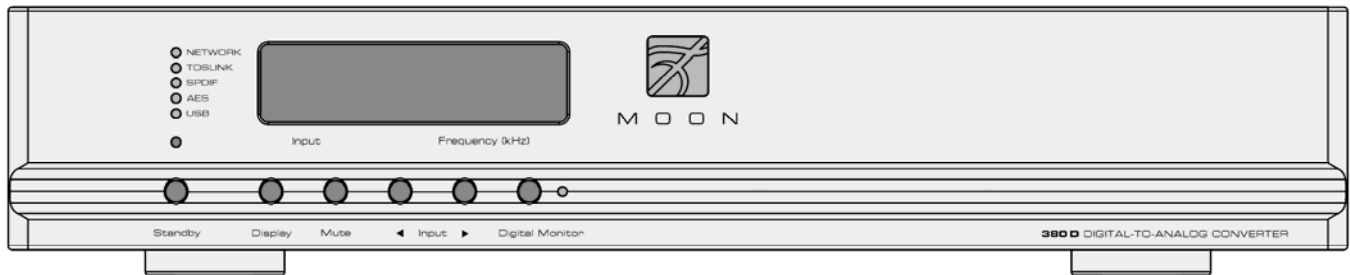


Figure 1: MOON 380D Front panel

The front panel will look similar to Figure 1 (above). The large digital display window indicates the selected digital input ("D1" thru "D8") its corresponding sampling frequency in kHz ("44.1" thru "192.0") of the source material currently being played. The "Standby" button disengages all outputs from the rest of the **MOON 380D's** circuitry and turns off the digital display. However, when in "Standby" mode, all digital and analog audio circuitry remains powered up to help maintain optimal performance. The blue pilot LED located directly above the "Standby" button will no longer be illuminated. The "Display" button allows you to turn the digital display on and off. The "Mute" button mutes all analog output signals. Pressing the "Mute" button a second time will reinstate all analog output signals. When the output signal is muted, the aforementioned contents in the digital display window will repeatedly flash on and off.

The two (2) buttons labeled "◀ Input ▶" allow you to sequentially scroll, either forward "▶" or backward "◀" through all the digital inputs. The inputs are ordered as follows going forward (▶): "D1", "D2", "D3", "D4", "D5", "D6", "D7" and "D8". Inputs "D1" and "D2" accept an AES/EBU digital signal; "D3", "D4" and "D5" accept a S/PDIF digital signal; "D6" and "D7" accept an optical digital signal and "D8" accepts a USB type signal for use with a computer (or music server or streamer) equipped with a USB port and music player software. Note: you cannot connect a USB flash drive to the "D8" input. When you change inputs, the display window will show the new digital input and briefly four (4) dashes "----". These dashes indicate that the **MOON 380D** is in the process of locking onto a digital signal – this may take several seconds. Once the **380D** successfully locks onto the digital signal, the four dashes will be replaced by the sampling rate frequency of this digital signal. When the selected digital input signal cannot be locked onto, "----" remains in the display window. The **380D** is capable of processing an external digital signal at one of the following six (6) different sampling rates as shown in the display window: "44.1", "48.0", "88.2", "96.0", "176.4" and "192.0" (all in kHz).

A corresponding red LED, located to the left of the display window, will be illuminated - based on selected input type: "TOSLINK" (for "D6" and "D7"), "S/PDIF" ("D3", "D4" and "D5"), "AES" ("D1" and "D2") or "USB" ("D8").

In the event that your **MOON 380D** is equipped with the optional MiND music streaming module, the assigned input is "D9", the sampling rate will appear in the display as it does for inputs "D1" thru "D8", and the red "NETWORK" LED will illuminate.

The "Digital Monitor" button provides for a dedicated loop to be used with either a digital audio component that can record & playback (DAT, CD-Recorder, etc.) or a digital signal processor such as a room correction device. Pressing this button allows you to 1) monitor the recording as it occurs on the recording device or 2) engage the effects of the signal processor. The monitor component's digital output must be connected to the **380D's** "Digital Monitor In" and its digital input must be connected to the **380D's** "Digital Monitor Out". The LED immediately to the right of this button will illuminate when the "Digital Monitor" function is engaged.

MOON 380D Digital-to-Analog Converter

Rear Panel Connections

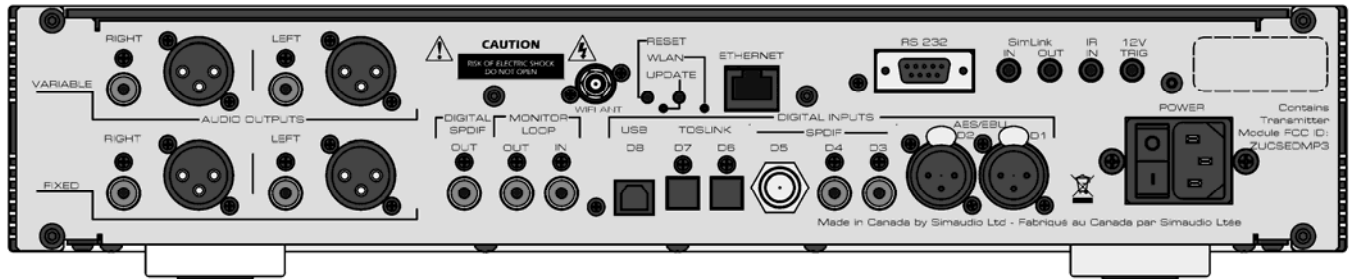


Figure 2: MOON 380D Rear panel

The rear panel will look similar to Figure 2 (above). On the left side are two rows of analog outputs; The bottom row has two pairs labeled “Right” and “Left”, each with a single-ended RCA and balanced XLR connectors. These are “Fixed Level” outputs and are intended to be connected to a line-level input on your preamplifier or integrated amplifier. The top row also has two pairs labeled “Right” and “Left”, each with a single-ended RCA and balanced XLR connectors. These are *OPTIONAL* “Variable Level” outputs whose volume level can only be adjusted using the included remote control. They can be connected to a line-level input on your preamplifier or integrated amplifier, or directly to your power amplifier’s input. We strongly recommend that you use the balanced XLR connectors on your **380D** to maximize its level of performance.

The middle section contains all of the digital inputs and outputs. The bottom row has one “Digital SPDIF Output” on an RCA connector, immediately followed by the SPDIF digital “Monitor Loop” with one input and one output, both on RCA connectors. Next is a group of eight (8) “Digital Inputs” labelled “D1” thru “D8”. Inputs “D1” and “D2” are AES/EBU on 3-pin XLR connectors and they benefit most from cables with an impedance of 110Ω. Inputs “D3”, “D4” and “D5” are S/PDIF – the first two on RCA connectors and the third on a BNC connector. They all benefit most from cables with an impedance of 75Ω. Inputs “D6” and “D7” are Optical and use a Toslink connector. Finally, input “D8” is USB type-B connector.

The area directly above the eight (8) digital inputs is reserved for the optional MiND Music Streamer. If your **MOON 380D** is equipped with the MiND option, the you will see a socket for a WiFi antenna and a RJ45 ethernet connector socket. Please consult the “MiND Setup Guide” and “MiND User Guide” for further details.

The right side of the rear panel has various connectors for external communications. The **380D** is equipped with full-function bi-directional RS-232 port control and status for custom integration or automation, as well as future software updates. Immediately to the right of the RS-232 port are two (2) “SimLink” connectors labeled “in” and “out” on 1/8” mini jacks. Please refer to the next section entitled SimLink for more details. Next, there’s a 1/8” mini-jack input for use with aftermarket infrared remote control receivers. To the far right, there’s a 12V trigger output on a 1/8” mini-jack.

Finally on the right side is the “AC Power” section with a main power switch (“0”=off, “1”=on) and IEC receptacle for the included AC power cord.

All rear panel connectors have been chosen because they provide the best possible connections for your unit. A poor contact will degrade the signal substantially; Plugs and sockets should all look clean and free of dirt and corrosion. The easiest way to clean them is to remove the cables from their sockets and push them back in again. This procedure requires that your preamplifier and the rest of your components be completely turned off.

MOON 380D Digital-to-Analog Converter

SimLink™

The main feature of SimLink™ on the **MOON 380D**, involves the “Standby” function. By pressing down and holding the “Standby” button for 2 seconds on the **380D**, all other **MOON** components connected via the SimLink will go into “Standby” mode along with the **380D**. The same logic applies when switching from “Standby” to active mode. However, in the event that your **MOON 380D** is equipped with both the MiND Music Streamer and the variable analog outputs, then the SimLink™ offers many more features: Volume, Mute, Standby. Digital Input Selection all via the MiND app running on your Apple or Android device

The connection rules for the SimLink™ are very basic. You must always connect the supplied cable between one component's “SimLink™ Out” jack and another component's “SimLink™ In” jack. If you inadvertently connect the cable between either two “SimLink™ In” or two “SimLink™ Out” jacks, the SimLink™ communication feature will not function. Also, there is no master component in a SimLink™ chain; no one particular component operates as the main communications controller. In the event that you are using your **MOON 380D** with an older MOON product such as a P-7, P-8 or i-7, you will need to update the software of the older product to allow for complete SimLink™ functionality. Contact your retailer for further details.

Operating the 380D

We recommend that you leave your **MOON 380D** Digital-to-Analog Converter powered up at all times to maintain optimal performance. In the event that you plan to be away from your home for a few days, powering off the Digital-to-Analog Converter may not be a bad idea. Once fully “broken-in”, please keep in mind that your **380D** will require several hours of playing time before it reaches its peak performance after you've powered it up again.

Turning on your MOON 380D for the first time

Prior to turning this Digital-to-Analog Converter on for the first time, make sure that every cable is properly connected to avoid any problems. Then turn on your Digital-to-Analog Converter in the following manner:

- 1) Flick the main rocker switch labeled “POWER” to the ‘1’ (on) position on the rear panel.
- 2) Press the push button labeled “Standby” on the **380D**, the blue LED will confirm the unit is now operational.

On and Off Sequence

To avoid having any annoying noises (i.e. “thumps” and “pops”) emanate from your speakers when powering your **380D** on or off, you should

- 1) Always power up your **380D** before powering up your preamplifier and/or integrated amplifier.
- 2) Always power down your **380D** after powering down your preamplifier and/or integrated amplifier.

Balanced Operation

When using an unbalanced interconnect, the audio signal runs through both the center wire and the shield/ground wire. Any noise picked up by this interconnect (ie. nearby magnetic fields such as an AC power cord) will be reproduced by both the preamplifier and amplifier, then heard through the loudspeakers. Conversely, a balanced interconnect has three separate conductors; one for the ground and two for the actual signal. These two signals are identical except that one is 180 degrees out of phase with the other. For example, when one conductor is carrying a signal of +4 Volts, the other will be carrying a signal of -4 Volts. When these two inverted signals on a balanced line are output from the **MOON 380D**, any noise picked up by the interconnect will be eliminated since a differential circuit amplifies only the difference between these two signals: Noise on a balanced interconnect will be equal on both conductors and therefore not be processed.

MOON 380D Digital-to-Analog Converter

Remote Control Operation



Figure 3: CRM-2 Remote Control

The **MOON 380D** Digital-to-Analog Converter uses the '**CRM-2**' full-function remote control (figure 5). It operates on the Philips RC-5 communication protocol and is can be used with other Simaudio MOON components.

The '**CRM-2**' remote uses two AA batteries (included). To install them, simply slide the back plate off in the direction of the arrow; insert the batteries in the correct direction and then replace the back plate.

To engage the '**CRM-2**' remote for use with the **MOON 380D**, you must first press the button labeled **D/A**.

The **POWER** button located on the upper left will switch the integrated amplifier to either 'Standby' or 'On' mode.

The **DISPLAY** button turns the front panel display on and off.

The 2 buttons labelled **◀ INPUT ▶** allow you to sequentially scroll, either backwards or forwards, through all eight (8) available inputs. For example, to switch from "D4" to "D1" you may press either **◀ INPUT** three (3) times or **INPUT ▶** five (5) times. Pressing and holding down either of these buttons results in only a single change to the selected input.

The **MUTE** button turns off the output volume. Pressing the "Mute" button a second time will reinstate the output volume level back to its current setting.

For MOON 380D's equipped with the optional volume control:

The 2 buttons labelled **▼ VOL ▲** allow you to control the volume level. Pressing **▼ VOL** results in a decrease in the volume level; Pressing **VOL ▲** results in an increase in the volume level. You may either press and hold these buttons down or press them briefly to make volume adjustments.

MOON 380D Digital-to-Analog Converter

Specifications

Configuration	Balanced differential
Digital / Analog Power Supply Transformers	25VA / 10VA
Digital / Analog Power Supply Capacitance	17,600µF / 8,800µF
Digital Filter / Digital-to-Analog Converters	ESS ES9016 Sabre ³² 32-bit Hyperstream™
Frequency Response (full range)	2Hz - 100kHz +0/-3dB
THD @1kHz, 0dBFS (A-weighted)	< 0.001%
Intermodulation Distortion	< 0.001%
Dynamic Range	> 120dB
Signal-to-noise Ratio	> 120dB @ full output
Slew Rate	50V/µs
Channel Separation	> 116dB
Low Level Linearity	< ±0.25dB at -90dBFS
Intrinsic Jitter	1 picosecond RMS
Analog Outputs – Balanced	1 pair XLR – Fixed Level
<i>Optional Analog Outputs – Balanced</i>	<i>1 pair XLR – Variable Level</i>
Analog Outputs – Single Ended	1 pair RCA
<i>Optional Analog Outputs – Single Ended</i>	<i>1 pair RCA – Variable Level</i>
Analog Output Impedance - XLR / RCA	100Ω
Max. Analog Output @ 0dBFS - XLR / RCA	2.0 Volts
Bit-depth range / Sampling Frequency – All inputs	16 to 24 bits / 44.1kHz to 192kHz
Digital Inputs (8)	2 x AES/EBU , 3 x S/PDIF, 2 x TosLink, 1 x USB
Digital Outputs (1)	S/PDIF
Digital Monitor Loop	S/PDIF - 1 input / 1 output
Remote Control	Full-Function CRM-2
Power Consumption @ idle	10 watts
AC Power Requirements	120V / 60Hz or 240V / 50Hz
Shipping Weight	16 lbs / 7.5 Kgs
Dimensions (W x H x D, inches)	16.9 x 3.4 x 13.1

Optional MiND Music Streamer:

Signal Input – Wired	100Base-T RJ45 Ethernet interface
Signal Input – Wireless	IEEE 802.11 b/g/n Wi-Fi interface

Balanced Pin Assignment: Pin 1	Ground
Pin 2	Positive
Pin 3	Negative

NOTE: In the event that you require the RS-232 codes for your **MOON 380D**, please contact Simaudio Ltd. directly by either email (service@simaudio.com) or by toll-free telephone (877-980-2400).



Fuse Replacement:

For the 120V version use a 0.2A slow blow (5 x 20mm size).
For the 230V version use a 0.1A slow blow (5 x 20mm size).